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EXAMINER	
LEE, TOMMY D	

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/990,150	TRELEWICZ ET AL.	
	Examiner	Art Unit	
	Thomas D. Lee	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-68* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-17,19-21,23-30,32-45,47-49,51-53,55-61 and 63-68* is/are rejected.

7)☒ Claim(s) *12,18,22,31,46,50,54 and 62* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office action is responsive to applicant's amendment filed April 14, 2006. Claims 1-68 are pending.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 2, 6, 7, 9-11, 24-26, 29, 32-35, 37, 38, 40, 41, 43-45, 56, 57, 60 and 63-66 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,639,152 (Yamamoto).

Regarding claims 1, 2, 6, 7, 9-11, 24-26, 29 and 32-35, Yamamoto discloses a method for modifying printing based upon direct on-the-fly media characteristics, comprising: on-the-fly measuring at least one physical characteristic parameter of the print media (smoothness of printing surface of paper detected by reflection-type sensor (column 5, lines 41-44)); and in real-time performing a print modification to a print device for printing on the measured print media in response to the at least one on-the-fly directly measured physical characteristic parameter of the print media (coating agent applied to printing surface of paper (column 5, lines 44-50) prior to printing (column 5, line 61 – column 6, line 4)), wherein the on-the-fly directly measuring comprises scanning the media with a scanner (by means of sensor (column 5, lines 41-44)); and the method further comprises applying a surface coating on the media before printing (when smoothness below predetermined level, coating agent applied to printing surface

of paper (column 5, lines 44-50) prior to printing (column 5, line 61 – column 6, line 4)), wherein the surface coating is applied to only one side of the media (coating agent roller 59 applies coating agent 57 to one side of paper 14 (Figs. 8 and 9)). The method further comprises hot rolling the media before printing, comprising flattening rough fibers and drying the media (heat blower dries coating agent (column 5, lines 50-52)), and wherein the hot rolling is implemented after the application of a coating to cure the coating (heat blower 58 applied after application by coating agent roller 59 (Fig. 8)). The measuring further comprises measuring mottle effects in the printed media with a scanner comprising an array of scanning elements placed early in the media path (smoothness of printing surface of paper detected by reflection-type sensor 20 (column 5, lines 41-44; Fig. 4); mottle generally defined as irregularities in the visual appearance of a sheet of paper, and thus a lack of smoothness is an example of mottle). The measuring further comprises illuminating the media from behind using a bottom light source and collecting a resulting transmitted image using scanning elements (reflection-type sensor 54 underneath paper 14 (Fig. 8); "reflection-type" implies presence of illumination means on the same side of paper as reflection-type sensor). The performing a print modification comprises adjusting a print algorithm to compensate for mottle in the media by driving a local coating system for selectively applying a coating on the media (when smoothness is below a predetermined level, a coating agent is applied to paper; when smoothness is not below the predetermined level, the coating agent is not applied (column 5, lines 44-60)). The print device is a printer (invention relates to thermal printing apparatus (column 1, lines 6-15)).

Regarding claims 37, 38, 40, 41, 43-45, 56, 57, 60 and 63-66, Yamamoto discloses a print device, comprising: a marker system for rendering a page layout on a medium (thermal print head transfers ink onto paper (column 5, line 61 – column 6, line 4); and a processing system, coupled to the marker system, the processing system directly measuring on-the-fly at least one physical characteristic parameter of the print media and in real-time performing a print modification to the print device for printing on the measured print media in response to the at least one on-the-fly directly measured physical characteristic parameter of the print media (smoothness of printing surface of paper detected by reflection-type sensor (column 5, lines 41-44); coating agent applied to printing surface of paper (column 5, lines 44-50) prior to printing (column 5, line 61 – column 6, line 4)), wherein at least one scanner provides measurements of the at least one print media characteristic parameter (smoothness of printing surface of paper detected by reflection-type sensor (column 5, lines 41-44)); and further comprising a coating applicator coupled to the processor, the processor using the coating application to apply a surface coating on the media before printing (when smoothness below predetermined level, coating agent applied to printing surface of paper (column 5, lines 44-50) prior to printing (column 5, line 61 – column 6, line 4)), wherein the coating applicator applies a coating to only one side of the media (coating agent roller 59 applies coating agent 57 to one side of paper 14 (Figs. 8 and 9)). The print device further comprises hot rollers, the processor using the hot rollers to hot roll the media before printing, wherein the hot rollers flatten rough fibers and dry the media (heat blower dries coating agent (column 5, lines 50-52)), and wherein the hot rollers are used

for hot rolling the media after the application of a coating to cure the coating (heat blower 58 applied after application by coating agent roller 59 (Fig. 8)). The print device further comprises a scanner comprising an array of scanning elements placed early in the media path to detect mottle effects (smoothness of printing surface of paper detected by reflection-type sensor 20 (column 5, lines 41-44; Fig. 4); mottle generally defined as irregularities in the visual appearance of a sheet of paper, and thus a lack of smoothness is an example of mottle). The print device further comprises a bottom light source for illuminating the media from behind and a scanner for collecting a resulting transmitted image (reflection-type sensor 54 underneath paper 14 (Fig. 8); "reflection-type" implies presence of illumination means on the same side of paper as reflection-type sensor). The scanner provides the processor a control signal to adjust a print quality measurement algorithm, where the print algorithm is adjusted to compensate for mottle in the media by driving a local coating system for selectively applying a coating on the media (when smoothness is below a predetermined level, a coating agent is applied to paper; when smoothness is not below the predetermined level, the coating agent is not applied (column 5, lines 44-60)). The print device is a printer (invention relates to thermal printing apparatus (column 1, lines 6-15)).

4. Claims 1-5, 13-17, 23, 29, 35-39, 55, 60, 66 and 67 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,983,044 (Kodama).

Regarding claims 1-5, 13-17, 23, 29, 35 and 36, Kodama discloses a method for modifying printing based upon direct on-the-fly media characteristic parameters, comprising: on-the-fly directly measuring at least one physical characteristic parameter

of the print media (toner densities of toner patterns transferred onto paper measured (column 7, lines 46-49); measurement of resistance of paper, which is a physical characteristic parameter, with an ammeter (Abstract; column 9, lines 35-37 and 52-65)); and in real-time performing a print modification to a print device for printing on the measured print media in response to the at least one on-the-fly directly measured physical characteristic parameter of the print media (development bias voltage controlled according to comparison of actual toner densities and desired toner densities (column 7, line 49 – column 8, line 4) and resistance of paper (column 9, lines 52-65)), wherein the on-the-fly directly measuring comprises scanning the media with a scanner, wherein the scanner is a CCD camera (toner density sensor (column 7, lines 46-49) or CCD line sensor (column 8, lines 25-30)) and is used to determine whether toner is properly adhering to the media (proper toner adherence determined for above-mentioned comparison of actual and desired toner densities and resistance of paper). The on-the-fly directly measuring further comprises measuring a quality of print for the media, wherein the quality of print comprises print marking adhesion, and wherein the print marking is toner (toner densities measured, compared with desired toner densities (column 7, lines 46-57) thereby determining quality of print marking adhesion). Measuring comprises detecting the quality of print using at least one scanner, wherein the scanner is a CCD camera (CCD line sensor (column 8, lines 25-30)). The measuring comprises detecting print quality and the performing a print modification further comprises adjusting toner concentration when the print quality is poor (development bias voltage controlled, changing the amount of toner charges before

transfer, thereby enhancing toner density (column 7, line 63 – column 8, line 4)). The measuring further comprises illuminating the media from behind using a bottom light source and collecting a resulting transmitted image using scanning elements (lamp 3 illuminates paper from underneath, reflected light imaged onto CCD line sensor 8 (Fig. 1)). The print device is a digital copier including a printer (digital, full color copying machine with printer (column 3, line 66 – column 4, line 3)).

Regarding claims 37-39, 55, 60, 66 and 67, Kodama discloses a print device, comprising: a marker system for rendering a page layout on a medium (printer (column 3, line 66 – column 4, line 3)); and a processing system, coupled to the marker system, the processing system directly measuring on-the-fly at least one physical characteristic parameter of the print media and in real-time performing a print modification to the print device for printing on the measured print media in response to the at least one on-the-fly directly measured physical characteristic parameter of the print media (toner densities of toner patterns transferred onto paper measured (column 7, lines 46-49); measurement of resistance of paper, which is a physical characteristic parameter, with an ammeter (Abstract; column 9, lines 35-37 and 52-65); development bias voltage controlled according to comparison of actual toner densities and desired toner densities (column 7, line 49 – column 8, line 4) and resistance of paper (column 9, lines 52-65)), wherein at least one scanner provides measurements of the at least one print media characteristic parameter (toner density sensor (column 7, lines 46-49) or CCD line sensor (column 8, lines 25-30)), and wherein the scanner is used to determine whether toner is properly adhering to the media (toner densities measured, compared with

desired toner densities (column 7, lines 46-57) thereby determining quality of print marking adhesion). The print device comprises at least one scanner for detecting a print quality, wherein, the processor adjusts a toner concentration when the print quality is poor (development bias voltage controlled, changing the amount of toner charges before transfer, thereby enhancing toner density (column 7, line 63 – column 8, line 4)). The print device further comprises a bottom light source for illuminating the media from behind and a scanner for collecting a resulting transmitted image (lamp 3 illuminates paper from underneath, reflected light imaged onto CCD line sensor 8 (Fig. 1)). The print device is a digital copier including a printer (digital, full color copying machine with printer (column 3, line 66 – column 4, line 3)).

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 27, 28, 58 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto.

Yamamoto does not disclose whether the reflection-type sensor comprises a one-dimensional or two-dimensional array of scanning elements. However, the use of both types for measuring reflective light from a scanning surface is well known in the art, and it would have been obvious to one of ordinary skill in the art that either type may be used as a matter of design choice. It would have been obvious for one of ordinary skill in the art to provide either a one-dimensional or two-dimensional array in the device

disclosed by Yamamoto, given that both types are commonly used in conventional scanning devices.

7. Claims 30, 61 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Yamamoto or Kodama.

Regarding claims 30 and 61, Yamamoto and Kodama suggest a bottom light source, as opposed to a top light source, for reflecting light off the media, as mentioned above. However, one of ordinary skill in the art would have recognized that the placement of the light source above or below the media does not affect how the light source functions in illuminating the media for reception by a scanner. It does not matter whether the light source is place above or below the media, so long as the scanner is positioned to receive the light reflected from media. Thus, positioning the light source above the media would have been an obvious modification of either Yamamoto or Kodama to one of ordinary skill in the art.

Regarding claim 68, neither Yamamoto nor Kodama disclose an article of manufacture comprising a program storage medium readable by a computer, embodying computer-executable instructions for performing the method steps of above-rejected claim 1. However, it is well known for one of ordinary skill in the art to provide software programs stored in a storage device such as a CD-ROM, enabling a computer to perform image-processing steps, or enabling a computer to control other devices to perform image-processing steps. It would have been obvious for one of ordinary skill in the art to provide a program storage medium for enabling a computer to perform the

steps disclosed in either Yamamoto or Kodama, so that the steps can be performed by a computer, apart from specific processing hardware.

8. Claims 1, 2, 19-21, 35, 37, 38, 51-53, 66 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,624,911 (Cooper).

Regarding claims 1, 2, 19-21 and 35, Cooper discloses a method for modifying printing based upon direct on-the-fly media characteristic parameters, comprising: in real-time performing a print modification to a print device for printing on the print media in response to at least one physical characteristic parameter (adjusted threshold data determined for each color and type of print media (read Abstract); given the printer knows what type of print media is being used, adjusted threshold arrays are selected (column 12, lines 14-25)); wherein the performing a print modification further comprises adjusting halftone screens for media surface and absorption characteristics, wherein the halftone screens are adjusted for spatially varying and excessive dot gain (threshold arrays compensated for dot gain (column 10, lines 30-60; column 11, lines 24-34)). The print device is a printer (device includes print engine 36 (Fig. 1)).

Cooper does not explicitly disclose that the physical characteristic parameter of print media is measured on-the-fly. However, Cooper does state that the printer knows the type of print media being used (column 12, lines 17-19). It is well known in the art to provide information to a printer regarding media type by either user input or reading the media by means of a scanner. Reading the media to determine media type provides the obvious advantage of eliminating error due to incorrect input by a user, and thus it

would have been obvious for one of ordinary skill in the art to provide a scanner for determining the print media type in the device disclosed by Cooper.

Regarding claims 37, 38, 51-53 and 66, Cooper discloses a print device, comprising: a marker system for rendering a page layout on a medium (print engine 36 (Fig. 1)); and a processing system, coupled to the marker system, the processing system in real-time performing a print modification to the print device for printing on the print media in response to at least one physical characteristic parameter of the print media (adjusted threshold data determined for each color and type of print media (read Abstract); given the printer knows what type of print media is being used, adjusted threshold arrays are selected (column 12, lines 14-25)); wherein the marker adjusts halftone screens for media surface and absorption characteristics, wherein the marker adjusts halftone screens for spatially varying and excessive dot gain (threshold arrays compensated for dot gain (column 10, lines 30-60; column 11, lines 24-34)). The print device is a printer (device includes print engine 36 (Fig. 1)).

As mentioned above, Cooper does not explicitly disclose that the physical characteristic parameter of print media is measured on-the-fly. However, Cooper does state that the printer knows the type of print media being used (column 12, lines 17-19). It is well known in the art to provide information to a printer regarding media type by either user input or reading the media by means of a scanner. Reading the media to determine media type provides the obvious advantage of eliminating error due to incorrect input by a user, and thus it would have been obvious for one of ordinary skill in

the art to provide a scanner for determining the print media type in the device disclosed by Cooper.

Regarding claim 68, Cooper does not disclose an article of manufacture comprising a program storage medium readable by a computer, embodying computer-executable instructions for performing the method steps of above-rejected claim 1. However, it is well known for one of ordinary skill in the art to provide software programs stored in a storage device such as a CD-ROM, enabling a computer to perform image-processing steps, or enabling a computer to control other devices to perform image-processing steps. It would have been obvious for one of ordinary skill in the art to provide a program storage medium for enabling a computer to perform the steps disclosed in Cooper, so that the steps can be performed by a computer, apart from specific processing hardware.

9. Claims 8 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto as applied to claims 6 and 40, respectively, above, and further in view of Japanese Document 09286128 (Ishida).

Yamamoto does not disclose application of the surface coating to both sides of the media. Ishida discloses a thermal journal printer that applies a coating agent to both sides of thermal roll paper (read Abstract: Problem To Be Solved). Application of a coating to both sides enhances printing on both sides of the paper (read Abstract: Solution), and thus one of ordinary skill in the art would have been motivated to provide for the application of a coating to both sides of a recording sheet in the printer disclosed in Yamamoto, in view of Ishida.

10. Claims 47-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto as applied to claim 43 above, and further in view of Kodama.

Yamamoto does not disclose a scanner for measuring a quality of print for the media, wherein the quality of print comprises print marking adhesion, and wherein the print marking is toner. Kodama, as set forth above, discloses a toner density sensor (column 7, lines 46-49) or CCD line sensor (column 8, lines 25-30) for measuring toner densities, which are then compared with desired toner densities (column 7, lines 46-57) thereby determining quality of print marking adhesion. Kodama enhances the quality of the resulting print by assuring that desired toner densities appear on the media, and thus it would have been obvious for one of ordinary skill in the art to modify the teaching of Yamamoto by providing a means for determining print marking adhesion, such as disclosed by Kodama.

Allowable Subject Matter

11. Claims 12, 18, 22, 31, 46, 50, 54 and 62 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: No prior art has been found to disclose or suggest modification in real-time printing in response to on-the-fly directly measured print media characteristic parameter, by implementation of hot rolling prior to the application of a coating to lower the moisture content of the media, thereby improving coating coverage and adhesion, as recited in claims 12 and 46; or by application of a coating to promote adhesion when print marking

adhesion is poor; as recited in claims 18 and 50; or by adjustment of halftone screens to prevent bleed through thin media, as recited in claims 22 and 54; or on-the-fly directly measuring at least one print media characteristic parameter, by illumination of the media from behind using a bottom light source and collection of resulting transmitted image using scanning elements and reflecting light off of media using a top light source; as recited in claims 31 and 62.

Response to Arguments

13. Applicant's arguments filed in response to the rejections of the above claims as set forth in the prior Office action mailed January 10, 2006 have been fully considered but they are not persuasive.

On pages 12 and 13 of applicant's response, applicant asserts that Yamamoto fails to perform, in real time, a print modification to a print device for printing on the measured print media in response to a measured physical characteristic of the print media. Applicant states that Yamamoto merely senses the smoothness of paper and then rolls the paper if the paper is determined not to be sufficiently smooth. However, as mentioned in the prior Office action, Yamamoto discloses modification by applying a coating agent (see Yamamoto, at column 5, lines 44-50). It should be noted that applicant's specification discloses print modification by coating the print media (see applicant's specification, at page 15, line 19 – page 16, line 6; page 19, lines 6-13).

On page 13 of applicant's response, applicant asserts that Kodama fails to disclose, teach or suggest making an on-the-fly measurement of at least one physical characteristic parameter of the print media. Applicant states that Kodama must print

toner particles and then review them, prior to making modifications to printing. However, as mentioned above, Kodama discloses measurement of resistance of paper, which is a physical characteristic parameter, with an ammeter (see Kodama, at Abstract; column 9, lines 35-37 and 52-65).

On pages 13 and 14 of applicant's response, applicant asserts that Cooper does not measure a physical characteristic of the print media on-the-fly. Applicant states that in Cooper a printing and measuring operation is performed for each combination of color and type of paper, and then a color to be printed is printed by halftoning the color using an adjusted threshold array. However, as mentioned in the prior Office action, Cooper explicitly states that the printer knows the type of print media being used (see Cooper, at column 12, lines 17-19); and it is well known in the art to provide information to a printer regarding media type by either user input or reading the media by means of a scanner. As reading the media to determine media type provides the obvious advantage of eliminating error due to incorrect input by a user, providing a scanner for determining the print media type in the device disclosed by Cooper would have been an obvious modification to one of ordinary skill in the art.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Lee whose telephone number is (571) 272-7436. The examiner can normally be reached on Monday-Friday, 7:30-5:00, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (571) 272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thomas D Lee
Primary Examiner
Technology Division 2625

tdl
June 22, 2006